Assignment two on pharmacokinetics and its clinical applications

Cut-off-date for submission: <u>Exactly one week ahead of final exam date</u>

1. A drug has an elimination t 1/2 of 6 hours and follows first-order kinetics. If a single 200-mg dose is given to an adult male patient (68 kg) by IV bolus injection, what percent of the dose is lost in 24 hours?
2. If the amount of drug in the body declines from 100% of the dose (IV bolus injection) to 25% of the dose in 8 hours, what is the elimination half-life for this drug? (Assume first-order kinetics.)
3. A drug has an elimination half-life of 8 hours and follows first-order elimination kinetics. If a single 600 mg dose is given to an adult female patient (62 kg) by rapid IV injection.
    i. What percent of the dose is eliminated (lost) in 24 hours assuming the apparent Vd is 400 mL/kg?
    ii. What is the expected plasma drug concentration (Cp) at 24 hours postdose?

4. For drugs that follow one-compartment open model kinetics, do you think the tissues and plasma must have the same drug concentration? Why?